

CLAIMS

1. A method for the purification of 1,1-dichloroethane comprising bringing 1,1-dichloroethane containing a compound having a nitro group and/or a hydroxyl group as a stabilizer into contact with zeolite having an average pore size of 3.4 to 11Å and/or a carbonaceous adsorbent having an average pore size of 3.4 to 11Å in a liquid phase to reduce the stabilizer.

2. A method for the purification of 1,1-dichloroethane as described in claim 1, wherein an Si/Al ratio of the zeolite is 2 or less.

3. A method for the purification of 1,1-dichloroethane described in claim 1 or 2, wherein the zeolite is at least one type selected from a group consisting of Molecular Sieve 4A, Molecular Sieve 5A, Molecular Sieve 10X, and Molecular Sieve 13X.

4. A method for the purification of 1,1-dichloroethane described in claim 1, wherein the carbonaceous adsorbent is Molecular Sieving Carbon 4A and/or Molecular Sieving Carbon 5A.

5. A method for the purification of 1,1-dichloroethane described in any one of claims 1 to 4, wherein a temperature for bringing the 1,1-dichloroethane containing the compound having the nitro group and/or the hydroxyl group as the stabilizer into contact with the zeolite and/or carbonaceous adsorbent is within a range of from -20 to +60°C.

6. A method for the purification of 1,1-dichloroethane described in any one of claims 1 to 5, wherein a pressure for bringing the 1,1-dichloroethane containing the compound having the nitro group and/or the hydroxyl group as the stabilizer into contact with the zeolite and/or carbonaceous adsorbent is within a range of from 0 to 1 MPa.

7. A method for the production of 1,1-difluoroethane comprising using as a reaction raw material 1,1-dichloroethane reduced in amount of a

compound having a nitro group and/or a hydroxyl group obtained by using the purification method described in any one of claims 1 to 6 contained as a stabilizer.

5 8. A process for the production of 1,1-difluoroethane comprising the following three steps:

(1) a step of using the purification method described in any one of claims 1 to 6 to reduce a compound having a nitro group and/or a hydroxyl group contained as a stabilizer in 1,1-dichloroethane;  
10 (2) a step of reacting the 1,1-dichloroethane reduced in amount of the compound having the nitro group and/or the hydroxyl group after the step of (1) with hydrogen fluoride in a gaseous phase in the presence of a fluorination catalyst to obtain a gas mixture mainly  
15 containing 1,1-difluoroethane; and

(3) a step of separating the gas mixture mainly containing the 1,1-difluoroethane obtained in the step of (2) and recirculating at least part of an unreacted product to the step (2).

20 9. A process for the production of 1,1-difluoroethane described in claim 8, wherein the step (2) is conducted by using 1,1-dichloroethane reduced in total content of the compound having the nitro group and/or the hydroxyl group obtained by the step of the above (1) to  
25 30 mass ppm or less.

10. A process for the production of 1,1-difluoroethane described in claim 8, wherein the step (2) is conducted by using 1,1-dichloroethane reduced in total content of the compound having the nitro group and/or the  
30 hydroxyl group obtained by the step of the above (1) to 10 mass ppm or less.

11. A process for the production of 1,1-difluoroethane described in any one of claims 7 to 10, wherein the compound having the nitro group and/or the  
35 hydroxyl group is at least one type of compound selected from a group consisting of nitro methane, nitro ethane, nitro cresol, nitro toluene, nitro phenol, phenol,

cresol, 2,6-di-butyl-p-cresol, and aminomethylphenol.

12. A process for the production of 1,1-difluoroethane described in claim 8, wherein the fluorination catalyst used in the step of the above (2)  
5 contains at least one type of element selected from a group consisting of Cu, Mg, Zn, Pb, Cr, Al, In, Bi, Co, and Ni, and the contact temperature is 100 to 350°C.

13. A process for the production of 1,1-difluoroethane described in claim 8, wherein the  
10 unreacted product recirculated to the step (2) in the step of the above (3) is at least one type of compound selected from a group consisting of 1-chloro-1-fluoroethane, 1,1-dichloroethane, and hydrogen fluoride.